INTERMOUNTAIN STATION
Central Reference File
No. 0.73

FOREST SERVICE
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SEP 23 1940
RESEARCH

RESEARCH NOTE

Northern Rocky Mountain Forest & Range Experiment Station

Missoula, Montana

No. 10 September 1940

COMPARISON OF INTENSIVE VERSUS LIMITED FOREST FIRE CONTROL ACTION

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Beginning July 12, 1940, the forests of northern Idaho, western Montana, and immediately adjacent to the north in British Columbia, were visited by the most severe and longest protracted lightning storms since systematic fire records have been kept. The number of new fires dumped into the laps of the fire control organizations surpassed all previous records, and, more significantly, all previous plans.

Four weeks later it was evident that while the national forests had met this test by controlling their fires, the Canadians had not been as fortunate in coping with the situation on their side of the International Boundary. With the approval of Regional Forester Kelley and Director Bradner, I therefore visited this section and obtained information on these two comparable cases. Four ranger districts were chosen on the Canadian side totaling about 5,380,000 acres. These districts lie immediately north of and are contiguous to the Kaniksu and Kootenai National Forests with their total of 4,754,000 acres protected.

The fire data which follow are, of course, preliminary estimates for the Canadian area because some of their fires are still out of control as this is being written. Costs and area burned on the national forests are very close to final figures for the period studied. In all cases these data furnish, for the first time, a reasonably specific basis on which to form an opinion as to whether or not the value of the resources saved justified the expense incurred, and the expense this year has been great. Such a comparison has been impossible in the past because never before have two similar, contiguous areas been exposed to similar fire weather, an extreme overload of fires, and the situation then met by two different intensities of action.

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FOR THE KANIKSU AND KOOTENAI NATIONAL FORESTS (Approximately 5,000,000 acres)	FOR AN ADJACENT, CONTIGUOUS, AND SIMILAR AREA IN CANADA (Separated from the Kaniksu and Kootenai National Forests only by the International Boundary Line)
Conditions Preceding the Trial by Fire	
1. November 1939 was one of the driest Novembers ever recorded by the U. S. Weather Bureau. Forest fuels went under the snow blanket far drier than usual. Snow pack during the winter was markedly deficient in depth.	1. November 1939 was 35 to 55 percent below normal according to published Canadian records. Winter's snow pack the lightest in many years.
2. Spring rains were normal but ceased on June 8 or 9 (3 weeks earlier than normal). No regionwide rains for nearly 7 weeks or until July 27-29.	2. Same as in the States. Showers around July 21 followed by regionwide rains July 25-28.
3. Fire danger as measured at numerous forest stations was above normal (class 4) in June, reaching class 5 at many stations, and class 6 at a few by July 11. (Class 7 is the worst possible fire day.)	3. Wood moisture and wind measurements available from Salmo, Nelson, and Creston, B. C. indicate about this same build-up of fire danger. These measurements showed that fuels were, in fact, a little more moist on the Canadian side.
4. Lightning storms began on July 12 and continued through the 21st. While a few local storms brought good rain immediately beneath them, many lightning strikes occurred outside the rain areas in dry fuels. Most of the storms were rated as dry, with little or no rain.	4. Lightning began at Nelson, B. C. at 3 p.m. July 11 accompanied by only 3 minutes of rain. Numerous similar storms occurred throughout the four ranger districts on July 12, 16, 20, and 23, with scattered local storms on intermediate days.
Preparedness	
5. On the basis of fire danger measurements and previously prepared fire control plans, the Kaniksu and Kootenai Forests had a total of 193 men, including 90 lookouts assigned primarily to fire control on July 11. That number was jumped to 214 men by noon of the 12th as soon as the weather forecast and local observations showed the imminence of lightning danger. These	5. For their 5 million acres on the Canadian side, the British Columbia Forest Service had available only 47 trained men distributed at only 8 headquarters stations and 9 lookout points.

two forests were likewise prepared with a fairly adequate road and trail system, communication lines, warehouses filled with firefighting tools and food, automobile and pack stock transportation, etc., all provided according to plans and work of the last 6 or 8 years. Costs of these presuppression measures, partly long-time investment and partly maintenance, have been high, of course.

(Because funds have been lacking to build and acquire adequate facilities, the Canadians estimate that they had available only one-twentieth of the facilities existing per unit of area south of the Line.)

Number of Fires - The Load

6. On July 12 the Kaniksu had 55 and the Kootenai 91 new lightning fires. By July 21 they had had a total of 521 lightning fires started beginning July 12. (Previous plans considered 10 new fires in one day on one forest as the beginning of an "overload.")

More than twice as many fires on the 4-3/4 million acre Kaniksu-Kootenai area as on the 5-1/4 million acres immediately to the north in Canada.

6. By July 19 the four Canadian ranger districts reported 56 new fires for the week, with 66 more, or a total of 122, by July 26. (Due to lack of sufficient lookouts and the obscuring smoke which prevented immediate discovery, it is probable that many of their fires discovered up to August 16 actually originated July 12 to 21. By August 16 the Canadians had identified a total of 185 new fires for this period. Undoubtedly they actually had more than this, many being joined by other fires, and some being put out by the rains of July 25-28.)

Fire Control Action - The Test

7. The national forest policy calls for immediate and adequate attack of <u>all</u> fires with the intention of control before 10 a.m. the next day. Prepared plans, however, had never contemplated such a record-breaking overload of fires as actually occurred.

8. The Kaniksu and Kootenai National Forests spent $197,000 controlling their 521 lightning fires, and not one of these fires remained out of control for more than 3 days on the Kaniksu or 4 days on the Kootenai.

7. The Canadian policy calls for immediate attack on all fires in their incipiency. If they escape early control a strong attack with large forces is made <u>only</u> on those parts of the fire front which threaten timber of value or private property.

8. From July 12 to <u>August 16</u>, the Canadians spent $49,000 fighting principally 12 large fires which escaped control in their incipiency. This was an <u>apparent</u> saving of $152,000 compared to national forest suppression costs, but Canadian expenditures after August 16 reduced this saving materially. On September 1 the Kaniksu lookout on Little Snowy

Top, 6 miles from the Canadian Corn Creek Fire, could read a newspaper after dark by the light from that fire.

Results

9. A total of only 5,826 acres were burned over.

No private property was destroyed and no lives lost or fire fighters injured.

9. The total will not be known for some time, but of their 185 new fires 12 still remained uncontrolled on August 20. These 12 alone were estimated to have burned 220,000 acres of forest land, several hundred acres of unharvested wheat running 40 to 50 bushels per acre, 3 farmers' barns, and one logging camp, up to August 20. One man had been killed and two or three seriously burned or injured. Since August 20 much more area has been burned over, some of high value, some of very low value.

10. Damage to game, fish, and future recreation undoubtedly far less per acre than in Canada because even the ponderous grizzly had a chance to escape if the fire did not follow him day after day. No single Kaniksu or Kootenai fire was allowed to become bigger than 833 acres, and this, in fact, was the result of two fires joining. Wildlife and recreational damage on the national forests consequently may be estimated as being only one fiftieth to one one-hundredth of that suffered on the Canadian side. Scattered small burns have little effect on streamflow and no damaging erosion is expected as a result of the scattered national forest burns. Small burns in commercial timber do not prevent logging in the remainder of that drainage. When whole drainages are devastated, the costs of logging, to reach the next drainage or the one beyond that, are greatly increased.

10. Sixteen square miles comprising half the watershed supplying the town of Creston was burned out. Wildlife damage was extensive. Nine deer were seen by men in a clearing to come running out of the blazing forest. Seven of these deer, alarmed at sight of the men, plunged back into the blazing inferno, like horses returning into their burning barn. Grouse were seen to fly out of the burning forest and plummet to earth in the clearings - dead. I personally saw one grouse that had survived though its wings had been burned so that it could no longer fly more than 10 feet. The kill of caribou and grizzly bear, for which the vicinity of Creston, B. C. has been famous hunting country in the past, is incalculable. The famous fishing of the Kootenai Lakes Country will suffer a serious setback because of the deadly wood ashes now coming down hundreds of side streams. Dams formed of fire-killed debris will prevent fish from ascending the streams at spawning time. Recreation in this 5,000,000-acre area has lost many of its former attractions to tourists.

11. Damage was evaluated by the Kaniksu and Kootenai forest supervisors as totaling about $10,000 for the 5,826 acres burned over, or an average of about $1.75 per acre.

11. Using the national forest average of $1.75 per acre, the damage on the 220,000 Canadian acres burned amounts to $385,000. Adding $15,000 for 300 acres of 50-bushel wheat land and $15,000 for other damages, brings the total to $415,000 or 40 times the national forest loss. If the Corn Creek Fire has grown from 60,000 acres on August 20 to 90,000 acres, as estimated on September 10, another thirty to fifty thousand dollars should be added.

Summary

12. Cash expenditures for suppression, plus damage as assessed by supervisors, make a total of $207,000. This is $273,000 less than the similar figure for a similar area just across the boundary.

12. Cash expenditures for only July 12 to August 16 were $49,000, plus $415,000 for natural resources destroyed, equals $464,000. Costs and additional area burned since August 16 undoubtedly will bring this to a total of more than $480,000.

Conclusion

On the basis of the ridiculously low damage evaluation of only $1.75 per acre, the national forest policy of fire control, aided by the facilities largely constructed and acquired during the past 6 or 8 years, and used by a trained and partially adequate organization, appears to have paid a dividend of $273,000 in natural resources saved on two national forests during part of just one fire season!

There are eight other national forests in northern Idaho and western Montana which experienced much the same fire danger, fire load, and fire control this year. If two forests saved $273,000, it may be justifiable to assume that the 10 of them saved five times this amount or $1,350,000 during part of one year. The facilities, organization, and policy which accomplished this still exist and are ready to repeat this saving every year that Nature threatens as seriously as it did this year. The cost in current cash is high. The question is whether we should save in current cash expenditures and pay in natural resources.